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EXAMINER

MAI, KEVIN S

ART UNIT

PAPER NUMBER

2109

MAIL DATE

DELIVERY MODE

09/27/2007

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/774,028

Applicant(s)

FAN ET AL.

Examiner

Kevin S. Mai

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 06 February 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1 - 32 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1 - 32 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 06 February 2004 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

1. Claims 1 – 32 have been examined and are pending.

Specification

2. The title of the invention is not descriptive. A new title is required that is clearly indicative of the invention to which the claims are directed.

Drawings

3. The drawings are objected to because the drawings do not contain any descriptive text labels for any of the components. Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as “amended.” If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either “Replacement Sheet” or “New Sheet” pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Claim Rejections - 35 USC § 102

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

5. Claims 21, 22, 24, 26, 27 – 32 are rejected under 35 U.S.C. 102(e) as being anticipated by U.S. Patent No. 6687758 B2 to Craft et al. (hereinafter “Craft”).

As to Claim 21, Craft teaches a system for communications, comprising:

a first set of network interface cards comprising a second set and a third set (Figure 1 of Craft discloses at least two INICs in blocks 22 and 25 which can be construed as the first set, and then each individual block can be seen as the second and third set), **the second set comprising a network interface card that is associated with a system that is capable of offloading one or more connections** (Column 1 lines 66 – 67 and Column 2 lines 1 – 2 of Craft discloses that at least one intelligent network interface card (INIC) is coupled to a host computer to offload protocol processing for multiple network connections), **the third set comprising one or more network interface cards** (Column 2 lines 30 – 33 of Craft discloses that although FIG. 1 illustrates an embodiment with 2 INICs each having two ports, more or less INICs each having more or less ports are

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possible); and

an intermediate driver coupled to the second set and to the third set (Figure 1 of Craft discloses a port aggregation driver being coupled with the first INIC (block 22) and second INIC (block 25)), **the intermediate driver supporting teaming over the second set and the third set** (Column 5 lines 27 – 29 of Craft discloses that the port aggregation driver is there to handle the port aggregation requirements imposed by the switch. This reads on the intermediate driver supporting teaming and then it was shown above that the driver is coupled to the second and third set and thus they also support teaming).

As to Claim 22, Craft teaches the system according to claim 21, wherein the system that is capable of offloading one or more connections is associated only with the second set (Column 1 lines 66 – 67 and Column 2 lines 1 – 2 of Craft discloses that at least one intelligent network interface card (INIC) is coupled to a host computer to offload protocol processing for multiple network connections. Where at least one covers the scenario of only one, thus the system would be only associated with the INIC that could handle offloading).

As to Claim 24, Craft teaches the system according to claim 21, wherein intermediate driver supports teaming over the first set (Column 5 lines 27 – 29 of Craft discloses that the port aggregation driver is there to handle the port aggregation requirements imposed by the switch. Figure 1 of Craft discloses that the driver is coupled

to both the second and third set, which makes up the first set. Thus teaming is supported over the first set).

As to Claim 26, Craft teaches a method for communicating, comprising:

(a) teaming a plurality of network interface cards (Column 2 lines 3 – 4 of Craft discloses plural network connections can be maintained via plural INIC ports and a port aggregation switch); **and**

(b) associating at least one network interface card of the plurality of network interface cards with a system that is capable of offloading one or more connections (Column 1 lines 66 – 67 and Column 2 lines 1 – 2 of Craft discloses that at least one intelligent network interface card (INIC) is coupled to a host computer to offload protocol processing for multiple network connections).

As to Claim 27, Craft teaches the method according to claim 26, wherein (b) comprises solely associating the system that is capable of offloading one or more connections with a single network interface card of the plurality of network interface cards (Column 1 lines 66 – 67 and Column 2 lines 1 – 2 of Craft discloses that at least one intelligent network interface card (INIC) is coupled to a host computer to offload protocol processing for multiple network connections. Where at least one covers

the scenario of only one, thus the system would be solely being associated with the INIC).

As to Claim 28, Craft teaches a method for communicating, comprising:

teaming a plurality of network interface cards of a host computer (Column 2 lines 3

– 4 of Craft discloses plural network connections can be maintained via plural INIC ports and a port aggregation switch);

adding an additional network interface card to the host computer, the additional network interface card supporting a system that is capable of offloading traffic from a host protocol processing stack (Column 1 lines 66 – 67 and Column 2 lines 1 – 2 of Craft discloses that at least one intelligent network interface card (INIC) is coupled to a host computer to offload protocol processing for multiple network connections); **and**

teaming the plurality of network interface cards and the additional network interface card (Column 5 lines 53 – 55 of Craft discloses that port aggregation and fail-over switching mechanisms are provided across multiple INICs notwithstanding individual INIC control and processing of each fast-path connection (where fast-path connections are read as offloading). Thus the additional network card supports port aggregation notwithstanding offloading (fast-path connections)).

As to Claim 29, Craft teaches the method according to claim 28, further comprising:

handling packets of a particular connection only via the additional network interface card, the particular connection being maintained by the system that is capable of offloading traffic from the host protocol processing stack (Column 3 lines 16 – 20 of Craft discloses that the ATCP protocol stack is used to offload selected network connections to the INICs for fast-path processing of messages corresponding to those selected connections).

As to Claim 30, Craft teaches the method according to claim 28, wherein the additional network interface card, which has been teamed with the plurality of network interface cards, is not solely associated with the system that is capable of offloading traffic from the host protocol processing stack (Column 5 lines 53 – 55 of Craft discloses that port aggregation and fail-over switching mechanisms are provided across multiple INICs notwithstanding individual INIC control and processing of each fast-path connection. This reads on the claim since the INICs are capable of both teaming and offloading and thus are not solely associated).

As to Claim 31, Craft teaches the method according to claim 28, further comprising:

processing packets of a particular connection via the host protocol processing stack, the particular connection not being an offloaded connection although being maintained by the system that is capable of offloading traffic from the host protocol stack (Column 3 lines 31 – 34 of Craft discloses that the ATCP functions such as creating and handing out fast-path connections to INICs may be included in an integrated protocol stack that also includes instructions for conventional protocol processing. This teaches a system that can not only control offload traffic but can also maintain regular traffic).

As to Claim 32, Craft teaches the method according to claim 31, further comprising:

transmitting the processed packets only through the additional network interface card (Column 1 lines 66 – 67 and Column 2 lines 1 – 2 of Craft discloses that at least one intelligent network interface card (INIC) is coupled to a host computer to offload protocol processing for multiple network connections. Where at least one covers the scenario of only one, thus the system would be only going through that INIC).

Claim Rejections - 35 USC § 103

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are

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such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

7. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

8. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

9. Claims 1 – 6, 12 – 15, and 17 – 19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Craft and further in view of U.S. Pub. No. 2004/0008705 A1 to Lindsay (hereinafter “Lindsay”).

As to Claim 1, Craft teaches a system for communications, comprising:

a transport layer/network layer processing stack (Column 3 lines 12 – 13 of Craft discloses that the host memory contains a conventional protocol processing stack); **and**

an intermediate driver coupled to the transport layer/network layer processing stack via a first miniport (Column 5 lines 27 – 29 of Craft discloses a port aggregation driver, read to be the intermediate driver, that is disposed between the INIC device driver, read to be the miniport driver, and the protocol processing stacks) **and** Craft does not teach but Lindsay teaches **a second miniport** (Figure 1 of Lindsay discloses a system with an IM Driver, which is clarified in paragraph [0025] line 6 to be an intermediate driver, that is connected to two blocks labeled Miniport Driver Instance #1 and Miniport Driver Instance #2),

Craft teaches wherein the first miniport supports teaming (Column 5 lines 49 – 51 of Craft discloses that the INIC device driver can control the two shown INICs with signals flowing from the port aggregation driver. Since it receives signals from the port aggregation driver the INIC device driver must support teaming. It is read that a miniport is a device driver and thus is read upon by the INIC device driver), **and**

wherein the second miniport is dedicated to a system that can offload traffic from the transport layer/network layer processing stack (Column 1 lines 66 – 67 and Column 2 lines 1 – 2 of Craft discloses that at least one intelligent network interface card

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(INIC) is coupled to a host computer to offload protocol processing for multiple network connections).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the system with two miniports taught by Lindsay, with the usage of teaming and a dedicated network interface card for offloading taught by Craft.

One of ordinary skill in the art at the time the invention was made would have been motivated to combine the two in order to (Lindsay paragraph 2 line 2) allow for load balancing across dissimilar NICs (due to the usage of different miniports which in turn communicate with the intermediate driver) with the additional ability to offload traffic thereby offsetting (Lindsay paragraph 2 line 4) performance efficiency degradation of the multiple driver system because offloading (Craft Abstract lines 3 – 4) reduces the protocol processing of the host.

As to Claim 2, Craft as modified teaches the system according to claim 1, further comprising:

a first network interface card coupled to the intermediate driver (Figure 1 of Craft shows the port aggregation driver being coupled with the first INIC (block 22)); and

a second network interface card coupled to the intermediate driver (Figure 1 of Craft shows the port aggregation driver being coupled with the second INIC (block 25)),

wherein the second network interface card supports the system that can offload traffic from the transport layer/network layer processing stack (Column 1 lines 66 – 67 and Column 2 lines 1 – 2 of Craft discloses that at least one intelligent network interface card (INIC) is coupled to a host computer to offload protocol processing for multiple network connections), **and**

wherein the first miniport, the first network interface card and the second network interface card support teaming (Column 5 lines 49 – 51 of Craft discloses that the INIC device driver can control the two shown INICs with signals flowing from the port aggregation driver. Since it receives signals from the port aggregation driver the INIC device driver must support teaming. It is read that a miniport is a device driver and thus is read upon by the INIC device driver. The two INICs that are connected represent the first and second network interface cards and because they also get signals via the INIC device driver from the port aggregation driver they must also support teaming).

As to Claim 3, Craft as modified teaches the system according to claim 2, wherein the first network interface card comprises a plurality of network interface cards (Column 2 lines 30 – 33 of Craft discloses that although FIG. 1 illustrates an

embodiment with 2 INICs each having two ports, more or less INICs each having more or less ports are possible).

As to Claim 4, Craft as modified teaches the system according to claim 2, wherein the second network interface card comprises a remote-direct-memory-access-enabled (RDMA-enabled) network interface card (Column 3 lines 43 – 47 of Craft discloses that the INIC chooses whether to send a packet to the host memory or to send the packet data directly to a destination in storage. Then in column 4 lines 40 – 41 of Craft it discloses that it is sent by direct memory access (DMA)).

As to Claim 5, Craft as modified teaches the system according to claim 2, wherein the second network interface card is the only network interface card that supports traffic from the system that can offload traffic from the transport layer/network layer processing stack (Column 1 lines 66 – 67 and Column 2 lines 1 – 2 of Craft discloses that at least one intelligent network interface card (INIC) is coupled to a host computer to offload protocol processing for multiple network connections. Where at least one covers the scenario of only one, thus that INIC would be the only network interface card that support traffic from the offloading system).

As to Claim 6, Craft as modified teaches the system according to claim 1, wherein the transport layer/network layer processing stack comprises a transmission control protocol/internet protocol (TCP/IP) stack (Column 2 lines 57 –

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58 of Craft discloses network connections, such as Transmission Control Protocol (TCP) connections, may be initiated between the host and any of the clients using IP).

As to Claim 12, Craft as modified teaches the system according to claim 1, wherein the second miniport supports traffic that is processed by the transport layer/network layer processing stack (Column 5 lines 53 – 55 of Craft discloses that port aggregation and fail-over switching mechanisms are provided across multiple INICs notwithstanding individual INIC control and processing of each fast-path connection. This implies that the all INICs in the system all have teaming support regardless if or if not they support offloading thus they are capable of supporting the traffic of the regular processing stack).

As to Claim 13, Craft as modified teaches the system according to claim 1, wherein the second miniport supports traffic that has not been offloaded by the system that can offload traffic from the transport layer/network layer processing stack (Column 5 lines 53 – 55 of Craft disclose that port aggregation and fail-over switching mechanisms are provided across multiple INICs. This implies that the multiple INICs in the system all have teaming support and thus are capable of supporting the traffic of the regular processing stack including traffic that has not been offloaded).

As to Claim 14, Craft as modified teaches the system according to the claim 1, wherein traffic that has been offloaded by the system that can offload traffic from

the transport layer/network layer processing stack bypasses the transport layer/network layer processing stack and the intermediate driver (Column 4 lines 44 – 49 of Craft discloses that fast-path messages to be transmitted from the host to the client are diverted from an application interface to the ATCP protocol processing stack which sends the message data to the INICs. Where the ATCP protocol processing stack is defined in column 3 lines 17 – 18 of Craft to be used to offload selected network connections to the INICs. Thus it is the offload system that sends data to the INICs).

As to Claim 15, Craft as modified teaches **the system according to claim 1, wherein the intermediate driver supports teaming** (Column 5 lines 27 – 29 of Craft discloses that the port aggregation driver is there to handle the port aggregation requirements imposed by the switch).

As to Claim 17, Craft as modified teaches **the system according to claim 1, wherein the intermediate driver is aware of the system that can offload traffic from the transport protocol/network protocol processing stack** (Column 5 lines 1 – 10 of Craft discloses that since the fast-path conditions described involve offloading control and processing of a connection to either of the INICs in association with the ports the fast-path and port aggregation protocol need to be synchronized. Thus the port aggregation driver, which has been read to be the intermediate driver, is synchronized, and thus aware, of the offloading control).

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As to Claim 18, Craft as modified teaches the system according to claim 1, wherein teaming supports load balancing (Column 6 lines 35 – 37 of Craft discloses that the port aggregation switch may change the port selection for load balancing purposes).

As to Claim 19, Craft as modified teaches the system according to claim 1, wherein teaming supports fail over (Column 5 lines 53 – 54 of Craft discloses that port aggregation and fail-over switching mechanisms are provided across multiple INICs).

10. Claims 7 – 10, 16, 20, 23 and 25 are rejected under 35 U.S.C. 103(a) as being unpatentable over Craft and Lindsay and further in view of U.S. Patent No. 6941377 B1 to Diamant et al. (hereinafter “Diamant”).

As to Claim 7, Craft as modified teaches the system according to claim 1. Craft does not teach but Diamant teaches wherein the first miniport comprises a virtual miniport instance (Figure 2 of Diamant discloses a Virtual NIC Driver which is read to be analogous to a miniport driver).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the system of claim 1 as taught by Craft as modified, with virtual drivers taught by Diamant.

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One of ordinary skill in the art at the time the invention was made would have been motivated to use virtual drivers to (Diamant Column 3 lines 27 – 29) provide opportunity to augment network interface drivers with functionality not originally planned for network interfaces.

As to Claim 8, Craft as modified teaches the system according to claim 7, wherein the virtual miniport instance comprises a virtual miniport instance adapted for teamed traffic (Figure 2 of Diamant discloses a Virtual NIC Driver which is read to be analogous to a miniport driver that is connected to multiple NICs and the system is explained in column 3 lines 17 – 18 of Diamant to allow for load balancing and fail-over which implies teaming).

Examiner recites the same rationale to combine used in claim 7.

As to Claim 9, Craft as modified teaches the system according to claim 1, wherein the second miniport comprises a virtual miniport instance (Figure 2 of Diamant discloses a Virtual NIC Driver which is read to be analogous to a miniport driver).

Examiner recites the same rationale to combine used in claim 7.

As to Claim 10, Craft as modified teaches the system according to claim 9, wherein the virtual miniport instance comprises an RDMA-enabled virtual miniport instance (Column 3 lines 43 – 47 of Craft discloses that the INIC chooses whether to send a packet to the host memory or to send the packet data directly to a destination in storage. Then in column 4 lines 40 – 41 of Craft it discloses that it is sent by direct memory access (DMA) and Figure 2 of Diamant discloses a Virtual NIC Driver which is read to be analogous to a miniport driver).

Examiner recites the same rationale to combine used in claim 7.

As to Claim 16, Craft as modified teaches the system according to claim 1. Craft does not teach but Diamant teaches **wherein the intermediate driver comprises a network driver interface specification (NDIS) intermediate driver** (Column 2 lines 43 – 45 of Diamant discloses the protocol stack is in communication with an intermediary layer using LSL or NDIS).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the usage of an NDIS intermediate driver taught by Diamant, with the system of claim 1 as taught by Craft as modified.

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One of ordinary skill in the art at the time the invention was made would have been motivated to combine because it is obvious to try among standard interfaces between the network layers.

As to Claim 20, Craft as modified teaches the system according to claim 1, wherein teaming supports virtual network capabilities (Figure 2 of Diamant discloses a Virtual NIC Driver which is read to be analogous to a miniport driver that is connected to multiple NICs and the system is explained in column 3 lines 17 – 18 of Diamant to allow for load balancing and fail-over which implies teaming. If the teaming is made to work with the Virtual NIC Drivers it must support virtual network capabilities).

Examiner recites the same rationale to combine used in claim 7.

As to Claim 23, Craft teaches the system according to claim 21. Craft does not teach but Craft as modified teaches wherein the system that is capable of offloading one or more connections offloads a particular connection, and wherein packets carried by the particular offloaded connection bypass the intermediate driver (Figure 2 of Diamant discloses a Virtual NIC Driver combined with the Virtual PS that is capable of bypassing the intermediary driver as shown).

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It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the system of claim 1 as taught by Craft as modified, with virtual drivers taught by Diamant.

One of ordinary skill in the art at the time the invention was made would have been motivated to use virtual drivers to (Diamant Column 3 lines 27 – 29) provide opportunity to augment network interface drivers with functionality not originally planned for network interfaces.

As to Claim 25, Craft teaches the system according to claim 21, further comprising:

a host protocol processing stack coupled to the intermediate driver via a first [virtual] miniport instance and (Column 5 lines 27 – 29 of Craft discloses a port aggregation driver, read to be the intermediate driver, that is disposed between the INIC device driver, read to be the miniport driver, and the protocol processing stacks) **and** Craft does not teach but Lindsay teaches **a second [virtual] miniport instance** (Figure 1 of Lindsay discloses a system with an IM Driver, which is clarified in paragraph [0025] line 6 to be an intermediate driver, that is connected to two blocks labeled Miniport Driver Instance #1 and Miniport Driver Instance #2),

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It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the system with two miniports taught by Lindsay, with the usage of teaming and a dedicated network interface card for offloading taught by Craft.

One of ordinary skill in the art at the time the invention was made would have been motivated to combine the two in order to (Lindsay paragraph 2 line 2) allow for load balancing across dissimilar NICs (due to the usage of different miniports which in turn communicate with the intermediate driver) with the additional ability to offload traffic thereby offsetting (Lindsay paragraph 2 line 4) performance efficiency degradation of the multiple driver system because offloading (Craft Abstract lines 3 – 4) reduces the protocol processing of the host.

However neither teaches the use of virtual miniport instances. Diamant teaches this in Figure 2 where it discloses a Virtual NIC Driver, which is read to be analogous to a miniport driver.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the system of claim 21 as taught by Craft, with virtual drivers taught by Diamant.

One of ordinary skill in the art at the time the invention was made would have been motivated to use virtual drivers to (Diamant Column 3 lines 27 – 29) provide opportunity

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to augment network interface drivers with functionality not originally planned for network interfaces.

wherein the first virtual miniport instance is associated with traffic of the second set and the third set (Column 5 lines 53 – 55 of Craft discloses that port aggregation and fail-over switching mechanisms are provided across multiple INICs notwithstanding individual INIC control and processing of each fast-path connection. Such that there exists a driver that would team both the set that did not offload and the set that does offload. Thus that driver would be associated with the traffic of both sets, **and**

wherein the second virtual miniport instance is associated solely with traffic of the third set (Column 1 lines 66 – 67 and Column 2 lines 1 – 2 of Craft discloses that at least one intelligent network interface card (INIC) is coupled to a host computer to offload protocol processing for multiple network connections. Where at least one covers the scenario of only one, thus the system would be solely being associated with the INIC).

11. Claim 11 is rejected under 35 U.S.C. 103(a) as being unpatentable over Craft and Lindsay as applied to claim 1 above and further in view of “Winsock Direct and Protocol Offload on SANs” to Microsoft. (hereinafter “Microsoft”).

As to Claim 11, Craft as modified teaches the system according to claim 1.

Craft does not teach but Microsoft teaches **wherein the system that can offload traffic**

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from the transport layer/network layer processing stack comprises a Winsock

Direct system (Page 2 of Microsoft discloses that Winsock Direct provides offload of the protocol stack).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the use of Winsock Direct taught by Microsoft, with the system of claim 1 taught by Craft as modified.

One of ordinary skill in the art at the time the invention was made would have been motivated to utilize Winsock Direct because (Microsoft page 1) Winsock Direct can increase system performance by freeing up CPU and memory bandwidth resources to be used by the application.

Conclusion

Prior art(s) made of record but not relied upon:

U.S. Pub. No. 2004/0054813 A1 to Boucher et al. 'TCP Offload Network Interface Device'

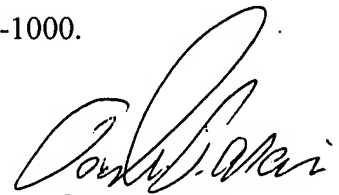
Any inquiry concerning this communication or earlier communications from the examiner should be directed to Kevin S. Mai whose telephone number is 571-270-5001. The examiner can normally be reached on Monday through Friday 7:30 - 5:00 EST.

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Taghi Arani can be reached on 571-272-3787. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

KSM



TAGHI ARANI
PRIMARY EXAMINER

9/26/07